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This is a report on the efforts of a junior college to provide high school students with information about the new technologies and to stimulate interest in college attendance. Results of the "Pre-College Seminar," which operated as if it were a professional conference, indicate that a general education course in technology can provide information not otherwise available to high school students, and that it can encourage them to enroll in college. Information for structuring similar programs is also included. (JC)

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REPORT ON

PRE-COLLEGE SEMINAR

MAY 1967

"CHALLENGE OF TOMORROW'S TECHNOLOGY"

OFFERED BY

GROSSMONT COLLEGE

FOR

SELECTED HIGH SCHOOL STUDENTS

FALL 1967

JC 690 140

UNIVERSITY OF CALIF.
LOS ANGELES

APR 19 1969

CLEARINGHOUSE FOR
JUNIOR COLLEGE
INFORMATION

GROSSMONT COLLEGE

A REPORT ON THE PRE-COLLEGE SEMINAR

THE ORIGIN AND NEED

Studies by this college and other agencies all indicate a considerable local and nation-wide need for technical personnel with at least two years of college education. The "Tri-College Survey" in 1962 indicated a number of technical fields in which Grossmont College might offer technical programs that would provide members of the local community with local employment. A study by Bill Dellegar in 1966 indicated almost unlimited need for persons with knowledge of electronics in San Diego County. The "Science and Engineering Technician Study" in 1964 indicated the technical manpower needs for the state of California. Thus Grossmont College was encouraged to initiate several engineering and technical programs in conjunction with its other offerings.

Technical programs, in large part because of the large capital investment, are expensive to operate. To further complicate matters, classes must be relatively small to allow for good instruction, though they must be large enough to justify the course offering in terms of the entire college program. If attrition rates in entry courses are high, this further curtails the enrollment in advanced courses compounding the financial problem. An optimum situation would be one in which sufficient numbers of students with interests and abilities for the technical programs would enter the programs so that even the most advanced course would be filled at the outset.

Those involved with the engineering and technical programs at Grossmont College have been concerned that more students should take advantage of programs and better serve the community. One of the earliest techniques used to provide in-service education was to offer course work in the Evening Division. This was primarily done in electronics due to the lack of full-time day faculty. However, this practice has been continued and expanded with considerable success.

Other means for extending the service of the engineering and technical programs have involved various recruiting techniques. These have included visits by members of the faculty and administration to the District's high schools. These visits began as simple speeches to senior classes and evolved to slide and multiply lecturer presentations to entire senior classes. More recently, visits have been made to individual classrooms. These have been classes in subjects in which students most likely to be adept at technical subjects would be enrolled.

Two recruiting means which have brought students to the college laboratories have been used. The annual Open House has been well attended each year and numerous materials made available to potential students and their parents. During the past year students have been bussed from each high school to specifically visit the electronics and other laboratories.

DEVELOPMENT

Since the inception of Grossmont College there has been a strong interest in and effort made to provide general education to the entire student body. As evidence of this, the College's general education requirements exceed the statutory minimums and several special courses have been developed by the departments to better provide general education to non-majors.

In January of 1967 the members of the Engineering and Technical Department met to discuss several curricular proposals. Included in these proposals was one for a general education course in technology. It was proposed that this course involve both lecture and laboratory experience and consider a series of current topics which would require technical assistance or considerations in their solutions. (see appendix 1) It was suggested that the course could also be used as a recruiting device if it were offered in the Evening Division and that high school seniors could be invited to take the course for credit before graduation.

After considerable discussion it was agreed by the department that financial support would be sought for an experimental form of the course, resulting in a quick and generous response from Wave-Labs Corporation of San Diego. The course would be offered for two days a week for one month in the late afternoon. Only high school seniors would be allowed to attend and would be bussed to the college. During one of the special conferences with the Grossmont High School District the experimental form of the course became identified as the "Pre-College Seminar."

Both the general education course and the experimental form were to be team efforts in order to provide a range of technical backgrounds. Thus the development of the course outline and materials required the commencement of numerous meetings of the members of the team that would eventually teach the course. The team members included Bill Dellegar, Bob Evans and Al Hanson. An agenda for an early meeting of this group is included as appendix 2.

The first task of the team was to decide on the topics to be considered and the form in which they would be presented. Many topics were considered and from these automation, bioengineering, and oceanography were selected.

It was decided that the PCS should be operated as if it were a professional conference. With this in mind, an outline of activities was developed, appendix 3. In addition, the participants were to be greeted on the first day and given badges and note books. The presentation of course materials was to be as dynamic and interesting as possible. To this end a number of special materials were developed, several films and tapes were previewed and selected, a field trip was developed, and participants, in addition to team members from the G.C. faculty, were invited from U.C.S.D., appendix 4.

The need for testing and the types to be given were discussed with Chuck Stanley of the Counseling Department. For expediency, two tests used in the college's orientation class were adapted to the seminar.

Finally the group developed a brochure (appendix 5) to assist the high school counselors in their recruitment and selection of students to participate in the seminar. Each high school was encouraged to select and send up to eight students. These students were to have average or better ability and to be uncommitted to going to college.

RESULTS AND CONCLUSIONS

Attendance at the PCS sessions varied widely and never attained the maximum of 64. Thirty students attended the first session with four of the eight high schools well represented. The second session found thirty-four students in attendance and five high schools well represented, two to a lesser extent and one unrepresented. Attendance gradually declined to eleven at the last session with three high schools represented. See appendix 6.

The lack of initial attendance in all probability was due to a complete breakdown in the communication of the names of students to the college by the high school counselors coupled with a breakdown in the arrangements for bus transportation for the students to the college. No specific reasons can be determined for the lack of student lists. The bus problem was primarily due to lack of communication between college personnel and high school district personnel.

The decline in attendance as the seminar progressed can be attributed to two factors. Without bus transportation the students were required to provide their own transportation. This, coupled with the long period over which the seminar was spread, acted to inhibit attendance.

Results from the pre and post testing programs are only partial and summary in nature due to insufficient time for a more thorough statistical analysis. Generally, the pretest, appendix 7, indicates the majority of those students attending were not college committed.

The post test of those still in attendance may show a slightly greater degree of college commitment. However, in talking with those in attendance, both in and out of the seminar, the faculty involved felt that considerable interest in college attendance had been generated.

These feelings seem to be supported by summer school attendance and requests for admission to the fall term. Eight students began the summer session and seven remain. One of the seven has reduced his load. Of the eight in summer session only three completed the PCS. Twenty-four of the thirty-four PCS students (70%) have been processed for admission to the fall semester. This includes all but two or 82% of those that completed the seminar. (appendix 6)

One important result for the faculty involved was the communication with these high schools students and their opinions of their situation, counseling, and career information available. The students were most impressed with the college environment and its freedom. Many students indicated that the topics of the seminar were new, and for some, completely unknown prior to their attendance.

In conclusion, the Pre-College Seminar, in so far as an analysis has been completed, met its primary objectives of providing information about the new technologies and stimulating interest in college attendance. There seems to be good evidence that a general education course in technology can provide information which is not otherwise available to the high school student. This additional information coupled with on-campus experience seem to provide encouragement to enroll in college.

THE FUTURE

Two paths seem to lead from the present experience. One would be to offer the full three unit course Engineering 1. If this were done, a special effort should be made to offer a section when high school students could attend or make special arrangements with the high school district to allow them to attend during the day.

The second alternative would be to continue the development of the special seminar on either a departmental or college-wide basis. If this were done, some consideration should be given to having the seminar occur during a period of two or three consecutive eight-hour days and having the students released from high school for that period.

APPENDIX I

Engineering I - Technological Practice 3 units 5 hours

A survey course designed to provide both insight and experience in modern technology. The methods, limitations, and future implications of technology for the student and society will be studied through a series of problems from architecture, electronics, aerospace, and industrial technology. No previous background in technology is required. A general education course in physical science.

Objectives:

1. To provide a general awareness of technology, its means and ends.
2. To introduce the student to a variety of specialized technical fields, their equipments, and challenges.
3. To indicate the possible educational paths to careers in and around technology.
4. To introduce the student to the problem solving methodology of technology.
5. To develop an appreciation for the constraints imposed by economics, materials, techniques and time.

APPENDI 2

TO: Bill Dellegar, Al Hanson, Bill Hansen, Erv Metzgar, Al Paul, Tom Scanlan

FROM: Bob Evans

Pursuant to our meeting on the technical core, Thursday, I would suggest that the group begin meeting to discuss and prepare the following items for our trial balloon in May.

1. Course descriptions, objectives, and rationale for the C & I Committee.

2. Short form descriptions for the May trial, including precise definition of goals and/or outcomes.

3. Selection and definition of problems and supplementary material to be included in the trial.

4. Development of problem material and actual run-throughs of problems to be used in the trial.

5. Definition of student population to take part in the trial and methods of selection or recruitment.

6. Definition of items to be evaluated during and after the trial, and development of evaluation instruments.

7. Division of labor and organization of team effort in preparation and classroom work during the trial.

8. Definition of kinds and amounts of assistance which local industry might provide for the trial in terms of instructional materials, equipment, field trips, money, etc.

9. A master schedule of events leading to the trial, and a detailed time schedule for the trial itself.

10. Planning of the trial activities.

I feel that if we are to do an outstanding job in May, we must immediately begin to work on the above items. After some consideration of the amount of work to be done, I really question whether we can do a proper job on an overtime basis.

In considering possible problems for the trial, I would like to suggest that problems might be found in some of the following areas:

Air Pollution
Water Pollution (San Diego Bay has been selected for a Federal boat pollution study.)

APPENDIX 2 - Cont'd

Sea Water Conversion (An Instrumentation Symposium on this topic will be held at Vacation Village in February.)

Duplication of Human Organs with Artificial Devices

Sound Abatement

Traffic Control

Automatic Machine Tool Control

City and Regional Planning

Public Transportation System

A second possible would be to select problems from those arising from under-developed countries which require technical solutions.

Attached is a copy of a VITA newsletter.

APPENDIX 3

PRE-COLLEGE SEMINAR - PROGRAM

Challenge of Tomorrow's Technology

May 8, 1967

I. Historical Review 1900 - 1967

II. Introductions

III. Arrangements
- A. Transportation
- B. Schedule
- C. Materials
- D. Outside Work
- E. Other

IV. Opinionaire

V. Break

VI. Overview of Seminar

VII. A Look Into the Future

May 10, 1967

I. History of Man-Machine Systems

II. Principles of Automatic Control (Feedback)

III. Requirement for Measurement - Guidance and Control

IV. Systems of Today and Tomorrow

Assignment 1: 750 words on "Automation--Promise or Problem"

May 15, 1967

Activity Day:

I. Rohr Numerical Control

II. San Diego Gas and Electric Control Center

May 17, 1967

I. Listening Assignment

II. Discussion of Assignment

III. Summary

APPENDIX 3 - Cont'd

May 22, 1967
Room 329

I. G.C. Laboratory Tour

II. Film "Careers in Engineering"

III. Discussion of Film

May 24, 1967
Room 220

I. Oceanography

Speaker: Dr. Melvin N. Peterson

May 29, 1967
Room 220

I. Biomedical Engineering

Speaker: Dr. Dean Franklin

May 31, 1967
Room 229

I. Education Availability and Alternatives

II. What to do Next

III. Post Test

IV. Summary

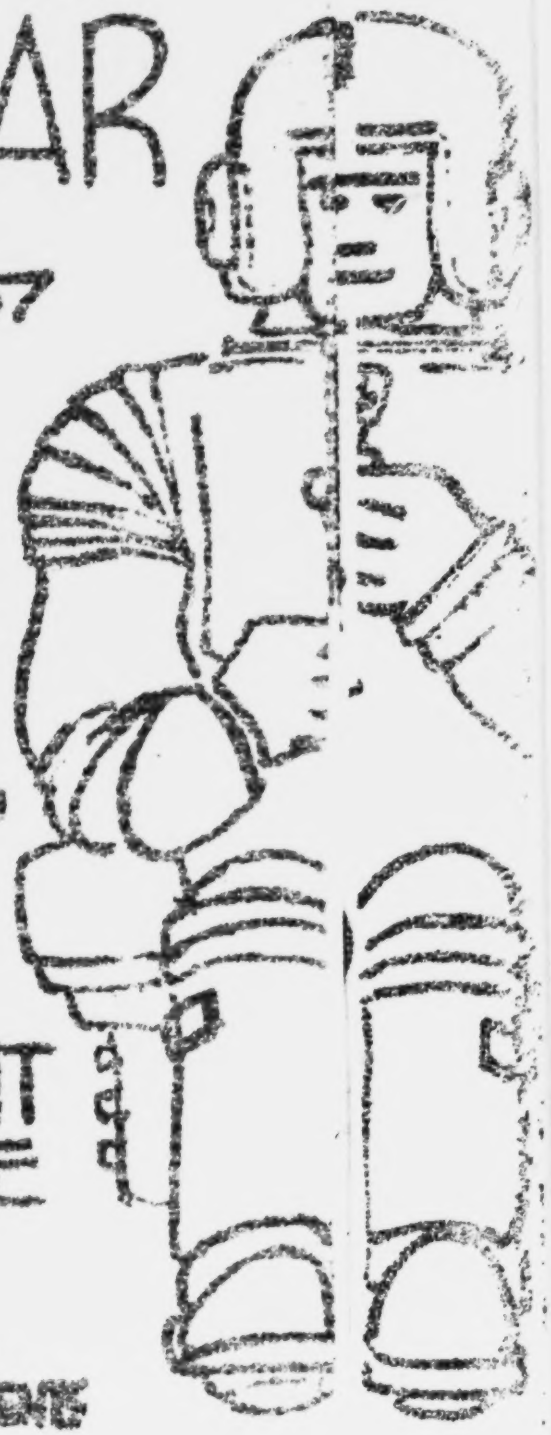
Summary of Equipment, Materials, & Activities

Date	Equipment	Materials	Personnel or Activity
5/8	3 carousels, tape recorder	250 slides prepared to provide historical technical perspective accompanied by period music	Lecture presentation Dellegar - Evans
5/10	1 carousel, sound movie projector, overhead, analog computer, demo. scope, feedback trainer	Films: Intro. to Feedback Automation Overhead transparencies	Lecture - demo. Evans - Dellegar Essay assigned (See appendix 8)
5/15			Field trip to San Diego Gas & Electric power plant and Rohr Corporation manufacturing area
5/17		See listening assignment sheet (appendix 9)	Group discussion of tapes and essays Dellegar, Evans, Stanley, Paul
5/22		Film "Careers in Engineering"	Tour and explanation of engineering and electronics labs
5/24			Lecturer - Dr. Melvin N. Peterson, Scripps
5/29	Slide projector		Lecturer - Dr. Dean Franklin, Scripps
5/31	Overhead projector	Overhead slides and handout materials on college and technical education, appendix 10	Lecture Evans - Dellegar

APPENDIX 5

PRE-COLLEGE SEMINAR

MAY 1967



"CHALLENGE OF TOMORROW'S TECHNOLOGY"

OFFERED BY

GROSSMONT COLLEGE

FOR

SELECTED HIGH SCHOOL STUDENTS

In this age of wonders, the average citizen, bombarded with tales of the still more miraculous, isn't quite sure whether he is looking through an Alice-in-Wonderland mirror or experiencing reality. He understands little except the result, but is happy to accept it. But does he appreciate that the result is the work of the technologist, that the technologist is a doer, a builder, a creator, and that he serves man by converting the materials and forces of nature to his purpose?

Even as he works at solving the many technical problems of today, the technologist is thinking ahead and shaping dramatic new concepts that someday may be commonplace as the electric light, the telephone and the jet plane. By the year 2000, if systems now under development are perfected, men - some with damaged hearts replaced by transistorized pumps - will travel from city to city on trackless trains at supersonic speeds, and communicate quickly with any point on earth - or other planets - by means of elaborate networks of beamed light. Their food may be grown on what is now wasteland-barren desert and tundra, converted to rich granaries by controlled climate beneath enormous, inflated domes. [illegible]

"Mirror, Mirror on the Wall, Who's the Fairest of Them All?"

[illegible] they will live in long periods in underwater houses, learning to move freely about the ocean's floor and to bring forth the vast mineral wealth buried there. Power is to be supplied with the harnessed power of the sun.

Given the challenge, the funds and the time, the technologist can overcome the technical problems that stand between any of these dreams and reality. In what sense, then, is it, in effect, only waiting for the scope of the problem to reach the dimensions of his solution?

How do we better understand these problems and promises?

The Interchange Seminar is designed to assist high school students approaching graduation in their development of awareness and insight into the technological world around them. The engineering faculty in cooperation with local industry will organize current technical topics and their social and technical implications

The Seminar will have an dynamic mix including numerous demonstrations, specially prepared materials and active participation of the student in discussion and laboratory activity. Industrial inspection tours will be arranged as time permits.

Goal of the Seminar will be to lead the student to sufficiently investigate the technological world around him (or her) so that he (or she) will be able to plan a course for the future. Career opportunities and requirements will be considered with special information provided on educational opportunities at Grossmont College and other colleges and universities in California.

The Seminar will meet every Monday and Wednesday during May 1967 from 3:30 p.m. to 5:30 p.m. starting Monday, May 1, 1967. Registration is limited to 2 students per high school in the Grossmont Union High School District. Transportation will be provided to the college by the High School District.

Counselors should send interested students names to the Registrar's office prior to Monday, April 24, 1967. Further information may be obtained by calling:

Mr. C. Allen Paul, Dean
Technical-Industrial Division
Grossmont College
465-1700, Extension 238 or 751

APPENDIX 6

ATTENDED SEMINAR

High Schools	Date 5/8	Date 5/10	Date 5/22	Date 5/31	Essay Submitted	Attended Summer Session	Applied for Admission to Fall Semester
El Cajon							
Wally Bentsen	X	X	X		X		X
Mike Blevins	X	X	X		X		
Howard Burton	X	X	X				X
Stuart Johnson	X						
Terry Roberts	X	X					X
Harris Scott	X	X		X	X		
Robert Supinger	X						
Harlan Truman	X	X	X	X	X	X	X
Milton Wyatt	X	X	X	X	X	X	X
El Capitan							
Dieber Cooley		X					X
Robert Harper	X	X					
Jerry Lancaster		X					
Robert Paige		X					
Bruce Shepard	X	X					
Granite Hills							
No students							
Grossmont							
Eric Clausen	X	X				X	X
Helix							
Ross Forman	X	X	X		X	X	X
Sandy Grout	X	X				X	X
Monte Vista							
Richard Ambrose	X	X					X
Jim McGowan	X	X	X	X	X		X
Lance Gross	X	X		X	X		X
Rich Steeber	X	X	X	X			X
Doug Swing	X	X		X			X
George Wallace	X	X	X	X	X		
Mount Miguel							
Bill Atkinson	X	X					
David Joynt		X	X		X		X
Marjorie Harrison	X	X				X	
Kathy Hitchcock	X	X	X		X	X	X
Kathi Ross	X	X	X		X		X
Kristen Wilkinson	X	X	X	X	X	X	X
Kenneth Wallace			X	X			
David Wollos	X	X	X	X	X		X
Santana							
Bonnie Eby	X	X	X		X		X
Stanley McCoy	X	X					
Ronald McVay	X	X	X		X		X
Tim Reed		X			X		X
Virginia Rouang		X					X
Nancy Senter	X	X			X		X

I.D.# PRE-TEST TALLY SHEET

NAME_____

COUNSELOR PRE-COLLEGE SEMINAR

A. At this time, what is the highest level of formal education you plan to complete?

1.	AA Degree	2
2.	BA or BS Degree	3
3.	MA or MS Degree	5
4.	Ph. D. Degree	0
5.	Undecided	20
6.	Other	0

A-2 Please consider your answer to A above and indicate below an answer to each of the following questions.

1. How long have you held this decision?

a.	Less than 1 year	12
b.	1-2 years	9
c.	2-4 years	1
d.	More than 4 years	1

2. Who was most influential in helping you to make this decision?

a.	Parents	12
b.	Relative	2
c.	Friend	1
d.	Teacher	2
e.	Counselor	2
f.	Other	Myself - 10, Don't know - 1

3. How sure are you that this is a positive decision? (Do not answer if undecided in A.)

a.	Extremely sure	3
b.	Quite sure	8
c.	Somewhat sure	3

B. At this time, what do you plan as your field of study?

Major Ind. Arts - 1, Data Proc. - 2, Diesel Engr. - 1, Arch. Draft. Eng., Dental Asst., Business, Anthro., Bus. Adm., Accounting

Minor Music/Hist., Architecture, Elect., Business, Library Sci., Psych.

Undecided 15

B-2 Please consider your answer to B above and indicate below an answer to each of the following questions.

1. How long have you held this decision?

a.	Less than 1 year	7
b.	1-2 years	5
c.	2-4 years	6
d.	More than 4 years	3

2. Who was most influential in helping you to make this decision?

a.	Parents	8
b.	Relative	1
c.	Friend	3
d.	Teacher	3
e.	Counselor	0
f.	Other	Myself - 7, Term Paper - 1

3. How sure are you that this is a positive decision? (Do not answer if "undecided" in B)

a.	Extremely sure	3
b.	Quite sure	7
c.	Somewhat sure	3

C. At this time what do you plan as your ultimate vocational goal?

a. Become good, Nursing, Dental Asst., Airline Pilot, Buyer, Make money, Arch. Draft., Acct., Archeology, Teacher

b. Undecided 19

C-2 Please consider your answer to C above and indicate below an answer to each of the following questions.

1. How long have you held this decision?

a.	Less than 1 year	6
b.	1-2 years	6
c.	2-4 years	5
d.	More than 4 years	2

2. Who was most influential in helping you to make this decision?

a.	Parents	5	d.	Teacher	1
b.	Relative	1	e.	Counselor	0
c.	Friend	1	f.	Other	Myself - 6, Brother - 1

3. How sure are you that this is a positive decision? (Do not answer if "undecided" in C)

a.	Extremely sure	2
b.	Quite sure	5
c.	Somewhat sure	3

D. What do you consider to have been your best subject in high school?

a. Eng. - 5, Hist. - 8, Math. - 5, Civics 5, Science 2, Chem. - 1, Bus. Law - Merch. - 1, Mech. Draft. - 2, Auto Shop - 1, Drama, Bio., Band

E. What do you consider to be your worst subject in high school?

a. Math. - 10, Eng. - 9, For. Lang. - 6, Hist. - 2, Health, Econ., Mech. Draw.

F. How many years do you estimate will be required for you to achieve:

1. Your educational goal 4 - (4), 6 - (3), 2 - (8), 5 - (1), (10) - 1

2. Your vocational goal 2 - (3), 3 - (2), 8 - (1), 30-40, (1) 4 - (2)

I.D.# Post-Test Tally Sheet

NAME_____

COUNSELOR Pre-College Seminar

A. At this time, what is the highest level of formal education you plan to complete?

1.	AA Degree	0
2.	BA or BS Degree	2
3.	MA or MS Degree	2
4.	Ph. D. Degree	1
5.	Undecided	5
6.	Other	L.V.N.

A-2. Please consider your answer to A above and indicate below an answer to each of the following questions.

1. How long have you held this decision?

a.	Less than 1 year	6
b.	1-2 years	2
c.	2-4 years	0
d.	More than 4 years	3

2. Who was most influential in helping you to make this decision?

a.	Parents	4
b.	Relative	1
c.	Friend	3
d.	Teacher	2
e.	Counselor	0
f.	Other	Me, All above, Seminar

3. How sure are you that this is a positive decision? (Do not answer if "undecided" in A)

a.	Extremely sure	4
b.	Quite sure	4
c.	Somewhat sure	1

B. At this time, what do you plan as your field of study?

Major L.V.N., Law or Agric. Engr., Math., IBM, Engr., Science 2, Radio Astronomer

Minor C.O.P., Lib. Sci., Nuclear, Math., Astronomy

Undecided 4

B-2. Please consider your answer to B above and indicate below an answer to each of the following questions.

1. How long have you held this decision?

a.	Less than 1 year	6
b.	1-2 years	2
c.	2-4 years	0
d.	More than 4 years	2

2. Who was most influential in helping you to make this decision?

a.	Parents	2
b.	Relative	1
c.	Friend	3
d.	Teacher	4
e.	Counselor	0
f.	Other	Seminar 3, P.C.S.

3. How sure are you that this is a positive decision? (Do not answer if "undecided" in B)

a. Extremely sure	2
b. Quite sure	5
c. Somewhat sure	2

C. At this time what do you plan as your ultimate vocational goal?

a. LVN, Law or Agri. Engr. vocation, Electrician, happiness, Data Proc., Hand Jobs, Nuclear Physics, Radio Astronomy

b. Undecided 3

C-2. Please consider your answer to C above and indicate below an answer to each of the following questions.

1. How long have you held this decision?

a.	Less than 1 year	4
b.	1-2 years	3
c.	2-4 years	0
d.	More than 4 years	2

2. Who was most influential in helping you to make this decision?

a.	Parents	5	d.	Teacher	4
b.	Relative	1	e.	Counselor	0
c.	Friend	3	f.	Other	Me 2, Testing, P.C.S.

3. How sure are you that this is a positive decision? (Do not answer if "undecided" in C)

a. Extremely sure	4
b. Quite sure	3
c. Somewhat sure	3

D. What do you consider to have been your best subject in high school?

a. Biology 2, History 3, Civics 2, Math. 5, Chemistry

E. What do you consider to be your worst subject in high school?

a. Math. 2, English 4, Chemistry, Foreign Language 2

F. How many years do you estimate will be required for you to achieve:

1.	Your educational goal	2, 4, 6, 4 - never end, 2-3, 10, 5, 6-8, many, 4-8
2.	Your vocational goal	2, 10, 4, 2-3, 20, 10, many, 4-8

APPENDIX 8

GROSSMONT COLLEGE

PRE-COLLEGE SEMINAR

Assignment 1 - Due Wednesday, May 17, 1967

Write a paper of approximately 750 words (2 typewritten double spaced pages) on the topic, "Automation - Problem or Prospect."

In writing this paper based on your present knowledge of automation, try to ask and answer such questions as:

How will automation affect me - will it be a problem or will it enhance my future?

How will my present choice of vocation be effected?

Will my job disappear or will I have to work more?

What kinds of things should be automated and why or what kinds of things should not be automated and why not?

What will the automated world of tomorrow be like?

APPENDIX 8

(SAMPLE STUDENT PAPER)

Automation

"Promise or Problem?"

Harris Scott, E.C.V.H.S.

5-16-67

Pre-College

Seminar

Automation can be and is a problem when the working force assumes an unfavorable attitude or at least an unflexible one. Automation will mean change to the average worker that can be interpreted as a loss of security or even a chance to be completely passed up by the radically changing world to him. This is vastly wrong to me. Most of their fears stem from ignorance--when they were educated automation was little more than just a word, and they were rigidly taught, but now the word is change and flexibility; the willingness to accept new and different ideas and concepts. The new average workman will be thoroughly schooled on the subject and its diversities. He will be prepared and willing to learn new skills if his prior ones were deemed no longer necessary. Till everyone is properly educated on the subject, it will present problems, but in the immediate and foreseeable future it will be a blessing.

Automation can be compared to a chain reaction or better even yet to a snowball: just like a snowball it started out from nonexistent to a small mass, once this starts rolling on the slopes of time it gathers more of itself and increases in diameter and perimeter. The more it picks up the more it can pick up--that is it keeps growing and at an increasing rate and encompassing more and more. With automation there is no end thus far in sight to the slopes it travels.

The future automation promises are limitless in both dividends and leisure time. It will also most likely cause to accompany with it a new or at least a different type of public philosophy and attitude toward the purpose of man and the definition of reality. We will become more and more reliant on machines and their labors, leaving man with time to do more and deeper creative thinking. It could possibly mean a change in our leisure time activities. The things we do now may become boring with all the left over time we would be able to devote to them. The products manufactured will have to cater to the new society; much more of their products will have to be aimed at our pleasure and help fill out time that education doesn't take up. Education will, I most definitely feel, become a very important factor in our future and without it you can't keep up with the world let alone automation.

The schools are just beginning to teach the value of understanding automation and have a long way to go. The only way the problem of automation can be coped with is with education, and when everyone fully understands it, it will no longer be a problem and only a boon to the world. Automation is in, it's here to stay and become a major portion of our lives, and, I hope, the freer of our time and minds.

APPENDIX 9

GROSSMONT COLLEGE
PRE-COLLEGE SEMINAR

Listening Library Assignment

On Wednesday, May 17, we will begin the session with approximately one hour of tape material. You should go to the listening library, which is located in the west wing of the library, any time Wednesday. Arrive as early as possible to avoid the confusion of the last minute rush.

On arriving at the listening library, go to the window and identify yourself by name and high school. A set of earphones will be checked out to you. From the list below, select approximately one hour of listening. The clerk at the window will give you the channel number on which your selected material will be played. On completion of your listening, return the headset to the window.

The seminar will continue at 4 p.m. in Room #329.

Tape #272 - "The Bleak Outlook: Jobs and Machines"
The need for the redefinition of work. The inevitable changes in our economy.
Time: 55 minutes

Tape #300 - "The Machine Universe" - Part III of "The Machine Image"
Dramatic readings from many writers of the past and present on the working man's relationship with the machine.
Time: 30 minutes

Tape #306 - "The New Breed" - Part IV of "The Machine Image"
The changing nature of the structure of employment in society, resulting from cybernation.
Time: 30 minutes

Tape #329 - "The War Machine" - Part V of "The Machine Image"
Quotations from the past and present relating technological development to militaristic demands.
Time: 30 minutes

Tape #296 - "The Inanimate Slaves"
Dramatized discussion of the history of machine development. Various writers such as Samuel Butler, Norbert Wiener, Samuel Gompers and Karl Rogers who have written about man's confrontation of the machine are quoted.
Time: 30 minutes

APPENDIX 10

COLLEGES IN CALIFORNIA OFFERING ENGINEERING PROGRAMS

California State College - Chico	7
California State College - Pomona	17
California State College - Sacramento	19
California State College - Northridge	21
California State College - San Jose	25
California State College - San Luis Obispo	29
Loyola University	33
Northrop Institute of Technology	35
San Diego State College	37
Stanford University	39
University of California - Davis	53
University of California - Redlands	63
University of California - Santa Barbara	65
University of the Pacific	77
University of Santa Clara	79
University of Southern California	81
California Institute of Technology	555
California State College - Long Beach	556
University of California - Berkeley	557
California State College - Los Angeles	557
University of California - Los Angeles	559

FIELDS OF ENGINEERING OFFERED IN CALIFORNIA

Aeronautics 25,20,39,555

Aerospace 17,35,37,81

Agricultural 53

Air Conditioning and Refrigeration 29

Aircraft Maintenance 35

Applied Mechanics 25,555

Applied Science 7,53

Architecture and Architectural 53

Astronautics 39,559

Bioengineering 79

Chemical Engineering 17,25,39,53,55,81,559

Civil Engineering 7,17,19,25,33,37,39,53,77,79,81,555,557

Design 559

Electrical Engineering 7,19,21,25,29,33,35,37,39,53,65,77,79,81, 555,556,557

Electronics 17,21,37,559

Electromagnetics 559

Engineering - General and Engineering Science 63,555

Engineering Graphics and Services 25

Engineering Mechanics 35,39

Environmental Systems and Resources 559

Industrial Engineering 17,25,29,81,557

Information Systems 25,559

Machine Shop 29

Materials 21,25,81,555,559

Mechanical Engineering 7,17,19,21,25,29,33,35,37,53,65,79,81 555,557

Metallurgical 29

Metal Processes 17

Mineral Technology 557

Naval Architecture 557

Nuclear 65,557,559

Operations Research 557

Petroleum 81

Structures 559

Thermal Engineering 557

Thermodynamic and Transport Processes 21

FALL, 1967

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